

REMARKS

Reexamination and reconsideration of this application is requested. Claims 1-2, 7-8, 13, and 18 have been amended. After this Response With Amendment, Claims 1-21 remain pending in this application. No new matter was added.

Objections To The Drawings

The Examiner objected to the drawings for minor informalities. In particular, the Examiner objected to FIG. 2 for failing to show a connection between “LAN Hub B” and “Gateway B”. The Applicants have corrected FIG. 2 as instructed by the Examiner. Accordingly, the Applicants respectfully submit that the objection to FIG. 2 has been overcome and should be withdrawn.

The Examiner objected to FIG. 3 and FIG. 4 because the reference number “306” was used to refer to “Operating System” in FIG. 3 and “Cluster Resource Manager” in FIG. 4. Applicants have corrected the reference number “306” in FIG. 4 to be “304” correctly identifying the Cluster Resource Manager, also as shown in FIG. 3. Accordingly, the Applicants respectfully submit that the objection to FIG. 3 and FIG. 4 should be withdrawn.

The Examiner objected to FIG. 3 because both items “316” and “318” were labeled “Network Interface Card A”. The Applicant has relabeled the object pointed to by reference number “318” as “Network Interface Card N”. Accordingly, the Applicants respectfully submit that the objection to FIG. 3 has been overcome and should be withdrawn.

Objections To The Specification

The Examiner objected to the Specification for various informalities. The Applicants have made the appropriate corrections to the Specification as indicated by the

Examiner. Accordingly, the Applicants respectfully submit that the objection to the Specification has been overcome and should be withdrawn.

Objections To The Claims

The Examiner objected to Claim 13 for including the phrase “one resource in the in the”. The Applicants have removed the “in the” from Claim 13. Accordingly, the Applicants respectfully submit that the objection to Claim 13 has been overcome and should be withdrawn.

Rejection Under 35 U.S.C. 112

The Examiner rejected Claims 2-6 and 8-12 under 35 U.S.C. 112, second paragraph for being indefinite. The Applicants have made the appropriate corrections to independent claims 2 and 8, as indicated by the Examiner. Accordingly, the Applicants respectfully submit that the rejection of Claims 2-6 and 8-12 has been overcome and should be withdrawn.

Rejection Under 35 U.S.C. 101

The Examiner rejected claims 7-12 for being directed towards a “computer readable medium”. The Applicants have amended independent claims 7 and 8 to include the language “computer readable storage medium”. Accordingly, the Applicants respectfully submit that the rejection of Claims 7-12 has been overcome and should be withdrawn.

Rejection Under 35 U.S.C. 102 (Eshghi)

The Examiner rejected Claims 1-2, 5-8, and 11-12 under 35 U.S.C. 102(b) as being anticipated by Eshghi U.S. Patent No. 5, 893,083.

Eshghi is directed towards a system and method for the management of services provided by a computer system. Eshghi teaches that an inferencing engine carries out inferencing operations on a declarative model of a service. The inferencing engine uses

facts about the system stored in a fact base. A resident goal store contains declarative definitions of goals which concern availability of services and which it is desirable for the system to continue to satisfy. The service model includes definitions of events which can occur in the system and may affect availability of services, and definitions of actions which can be taken to modify the configuration of the system. Eshghi teaches that when an occurrence of an event defined in the service model is reported to the apparatus, the event definition is used to guide analysis of the event report and appropriate updating of the fact base.

Goals which are linked to the updated facts are then examined to assess whether the goals are still satisfied. If a goal is no longer satisfied the service model is searched for actions which can re-configure the system to enable the goal to be re-satisfied. If a goal involves information about an entity in a part of the system managed by a second, different management apparatus, the second apparatus can be requested to establish a sub-goal concerning the status of that entity. Thereafter, the second apparatus takes appropriate action, autonomously, to keep the sub-goal satisfied, and reports back only if it is unable to satisfy the sub-goal.

The presently claimed invention, on the other hand, recites:

receiving at least one policy definition defined by a user, wherein the at least one policy definition includes at least one conditional relationship specification, and wherein the at least one policy definition programmatically specifies relationships between resources in an autonomic computing system and defines at least one desired end state therefor;

determining, by the autonomic computing system, that a state of at least one resource substantially satisfies a predetermined requirement of the at least one conditional relationship specification;

determining, by the autonomic computing system in response to the state of the at least one resource substantially satisfying the predetermined requirement, that the desired end state can be reached by applying the at least one policy definition conditioned by the at least one conditional relationship specification; and

placing the autonomic computing system in the desired end state by applying the at least one policy definition.

With respect to Claim 1, the Examiner on page 10 of the present Office Action states that Eshghi teaches:

determining that a desired end state for an autonomic computing system can be reached using conditional relationship specifications (Col. 1, lines 30-36, teaches whether the requirements and goals are met for a service based on the relationship between the services); and placing the autonomic computing system in the desired end state (Col. 1, line 30-36 specifying the task to be performed to make the service available).

However, col. 1, lines 30-36 of Eshghi merely states:

One contribution to the resolution of this problem has been disclosed in WO 94/09 427, which describes a system management method and apparatus in which a respective declarative model is provided for each system service. This model specifies, independently of any particular task to be performed in relation to that service, the requirements or goals needing to be met for that service to be available, in terms of the entities required and their inter-relationships.

This citation of Eshghi is completely silent on conditional relationship specifications. In fact the only teaching of Eshghi regarding anything conditional is found at col. 9, lines 55-67, wherein Eshghi states:

As described above, each service model 24 contains statements relating to the entity or entities relevant to that model and these statements will generally be used to form a number of conditional relationships between those entities specifying, for example, that a service entity is available if certain conditions are met. Thus, with reference to the service model 24 of FIG. 3, there may be truth valued statements A-H in the service model organized into three rules:

A if B or C
B if D and E and F
C if G or H

These conditional relationships, as taught by Eshghi, are only concerned with the availability of a service entity.

The presently claimed invention, on the other hand, has been amended to more clearly recite:

receiving at least one policy definition defined by a user, wherein the at least one policy definition includes at least one conditional

relationship specification, and wherein the at least one policy definition programmatically specifies relationships between resources in an autonomic computing system and defines at least one desired end state therefor;

determining, by the autonomic computing system, that a state of at least one resource substantially satisfies a predetermined requirement of the at least one conditional relationship specification;

determining, by the autonomic computing system in response to the state of the at least one resource substantially satisfying the predetermined requirement, that the desired end state can be reached by applying the at least one policy definition conditioned by the at least one conditional relationship specification; and

placing the autonomic computing system in the desired end state by applying the at least one policy definition.

Support for these amendments can be found in the U.S. Pre-Grant Publication of the present Application at, for example, paragraphs [0009], [0030]-[0031], and [0035]. No new matter has been added.

Nowhere does Eshghi teach these elements of Claim 1. In fact, Eshghi teaches away from “wherein the at least one policy definition programmatically specifies relationships between resources in an autonomic computing system and defines at least one desired end state therefor”. For example, Eshghi teaches at col. 5, lines 55-67 that:

As used herein, the term "declarative model" refers to an abstract description of a service, the meaning of the model being independent of any form of processing to which the model may be subject; the structure of the model, and the manner in which it is used, are not based on notions of sequence, iteration or choice (in contrast to what is typically the case with imperative models), and instead the model employs logical operators (such as AND, OR, NOT) and recursion as appropriate. Concepts of sequence, iteration and choice may well be represented in the model as part of the modelling of the service concerned but this does not affect the declarative nature of the model.

Furthermore, Eshghi uses conditional relationships (which are not the same as the conditional relationship specification of the presently claimed invention) to determine the availability of a service element, as discussed above, whereas the conditional relationship specifications of the presently claimed invention are concerned with a state of a resource. The autonomic computing system of the presently claimed invention determines that a state of at least one resource substantially stratifies a predetermined requirement of at

least one conditional relationship specification. Based on this determination, the autonomic computing system also determines that a desired end state defined by a policy definition (that is defined by a user) can be reached by applying the policy definition conditioned by the conditional relationship specification.

The autonomic computing system then applies the policy definition to place the autonomic computing system in the desired end state. The presently claimed invention allows a system to discover relationships programmatically and determining through discovering relationships that the end state can be reached. Nowhere does Eshghi teach or anticipate, and as discussed above teaches away from, the presently claimed invention. Accordingly, the presently claimed invention distinguishes over Eshghi for at least these reasons.

With respect to Claim 2, the Examiner states that Eshghi teaches:

determining that a desired end state for an autonomic computing system cannot be reached (Col. 1, lines 30-36) teaches whether the requirements and goals are met for a service based on the relationship between the services; determining that an acceptable sub-state can be reached (Col. 3, lines 56-60) teaches determining whether a sub-goal is satisfied using at least one of priority ratings, conditional relationship specifications, and alternative relationship specifications (Col. 1, lines 30-36) teaches relationship between the services; and placing the autonomic computing system in an acceptable state (Col. 4, lines 1-6) teaches performing operations to satisfy the sub-goal requirements.

However, Eshghi teaches with respect to a sub-goal at col. 3, lines 16-20 that:

A determination is made in a first management entity in the first group that satisfaction of the goal requires a sub-goal to be satisfied. That satisfaction of the sub-goal involves system entities in a second group different from the first group.

In other words, the sub-goal needs to be satisfied so that the main goal can be satisfied. In other words, once the sub-goal is completed, the system of Eshghi continues to try and satisfy the main goal.

The presently claimed invention, on the other hand, as now amended more clearly

recites:

receiving at least one policy definition defined by a user, wherein the at least one policy definition includes at least one conditional relationship specification, and wherein the at least one policy definition programmatically specifies relationships between resources in an autonomic computing system and defines at least one acceptable sub-state and at least one desired end state for the autonomic computing system;

determining that the desired end state for the autonomic computing system cannot be reached;

determining that the acceptable sub-state can be reached using at least one of priority ratings, conditional relationship specifications, and alternative relationship specifications; and

placing the autonomic computing system in the acceptable sub-state as a substitution for the desired end-state.

Support for these amendments can be found in the U.S. Pre-Grant Publication of the present Application at, for example, paragraphs [0009], [0030]-[0031], [0035], and [0062]. No new matter has been added.

The remarks and arguments made above with respect to Claim 1 are also applicable here with respect to the similar claim language of the other independent claims and will not be repeated. In addition, the presently claimed invention states that the acceptable sub-state is defined by the policy definition that defines the desired end state. Eshghi cannot teach this since Eshghi teaches that a sub-goal is managed by a completely separate manager than the manager concerned with the main goal. Also, the presently claimed invention, as now amended, also recites “placing the autonomic computing system in the acceptable sub-state as a substitution for the desired end-state”. The sub-goal in Eshghi is not a substitute for the main goal, but a stepping stone for achieving the main goal. The acceptable sub-state of the presently claimed invention, on the other hand, is a substitute for the desired end-state. Accordingly, the presently claimed invention distinguishes over Eshghi for at least these reasons as well.

Claims 7 and 8 recite similar to independent Claims 1 and 2, respectively. Therefore, the remarks and arguments made above with respect to Claim 1 and 2 are also applicable to Claims 7 and 8 as well, and will not be repeated.

The Applicants respectfully remind the Examiner that a proper rejection under 35 U.S.C. § 102(b) requires that a single reference teach (i.e., identically describe) each and every element of the rejected claims, which Eshghi clearly does not do.¹ Accordingly, the present invention distinguishes over Eshghi for at least this reason as well.

Therefore, in view of the foregoing amendments and remarks, the Applicants believe that the rejection of Claims 1-2 and 7-8 under 35 U.S.C. § 102(b) has been overcome. Claims 5-6 and 11-12 depend from Claims 2 and 8, respectively. Since dependent claims include all of the limitations of their independent claim, claims 5-6 and 11-12, are believed to also recite in allowable form. Accordingly, the Applicants request that the Examiner withdraw the rejection and allow Claims 1-2, 5-8, and 11-12.

Rejection Under 35 U.S.C. 102 (Sankaranarayan)

The Examiner rejected Claims 13-15 under 35 U.S.C. 102(b) as being anticipated by Sankaranarayan U.S. Pre-Grant Publication No. 2005/0033846.

Sankaranarayan is directed towards a resource management architecture for managing resources in a computer system. The system of Sankaranarayan includes a resource manager and multiple resource providers that support one or more resource consumers such as a system component or application. Each provider is associated with a resource and acts as the manager for the resource when interfacing with the resource manager. The resource manager arbitrates access to the resources provided by the resource providers on behalf of the consumers. A policy manager sets various policies that are used by the resource manager to allocate resources. One policy is a priority-based policy that distinguishes among which applications and/or users have priority over others to use the resources.

¹ See MPEP §2131 (Emphasis Added) “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). “The identical invention must be shown in as complete detail as is contained in the ... claim.”

Sankaranarayan also teaches that a resource consumer creates an "activity" at the resource manager and builds one or more "configurations" that describe various sets of preferred resources required to perform the activity. Each resource consumer can specify one or more configurations for each activity. If multiple configurations are specified, the resource consumer can rank them according to preference. This allows the resource consumers to be dynamically changed from one configuration to another as operating conditions change.

The presently claimed invention recited for amended Claim 13, on the other hand, comprises:

memory for storing at least one policy definition defined by a user, wherein the at least one policy definition includes at least one conditional relationship specification, and wherein the at least one policy definition programmatically specifies relationships between resources in an autonomic computing system and defines at least one desired end state therefor;

a resource monitor, communicatively coupled with each resource in the autonomic computing system, for monitoring, and communicating data with, each resource in the autonomic computing system;

an equivalency definer, communicatively coupled with each resource in the autonomic computing system, and with the memory, for defining at least one equivalency representing at least one set of equivalent resources in the autonomic computing system, and storing the at least one equivalency in the memory, wherein the equivalency defines the at least one set of equivalent resources that can be substituted for one another in accordance with the at least one policy definition that includes at least one conditional relationship specification to arrive at the desired end state;

a policy generator, communicatively coupled with the resource monitor and the memory, for providing in the memory a representation of a system-wide graph of available actions and at least one of: conditional relationship specifications and alternative relationship specifications, corresponding with resources in the autonomic computing system; and

an automation engine, communicatively coupled with the resource monitor, with at least one resource in the autonomic computing system, and with the memory, for providing available actions as defined by the at least one policy definition to the at least one resource in the autonomic computing system in order for the autonomic computing system to establish and maintain a desired end state.

The Examiner states on page 12 of the present Office Action that Sankaranarayan teaches:

memory for storing at least one policy definition (Fig. 1, 28); a resource monitor (§0010) resource manager, communicatively coupled with each resource in the autonomic computing system, for monitoring, and communicating data with, each resource in the autonomic computing system (§0010) resources are interfaced with the resource manager which monitors the resources

However, nowhere does Sankaranarayan teach or suggest a:

memory for storing at least one policy definition defined by a user, wherein the at least one policy definition includes at least one conditional relationship specification, and wherein the at least one policy definition programmatically specifies relationships between resources in an autonomic computing system and defines at least one desired end state therefor

Any policy taught in Sankaranarayan that is defined by a user is related to conflict resolution. See for example, paragraph [0083] of Sankaranarayan. This is not the same as the presently claimed “the at least one policy definition includes at least one conditional relationship specification, and wherein the at least one policy definition programmatically specifies relationships between resources in an autonomic computing system and defines at least one desired end state therefor”. Accordingly, the presently claimed invention distinguishes over Sankaranarayan for at least this reason.

The Examiner on page 12 of the present Office Action also states that Sankaranarayan teaches:

an equivalency definer, communicatively coupled with each resource in the autonomic computing system, and with the memory, for defining at least one equivalency representing at least one set of equivalent resources in the autonomic computing system, and storing the at least one equivalency in the memory (Page 4, §0079, lines 1-3) a resource quantifier 106 that determines the amount of resource available for allocation by the resource manager 102 which maintains this information

However, page 4, paragraph [0079] of Sankaranarayan merely states:

Each provider 104 has a resource quantifier 106 that determines the amount of resource available for allocation by the resource manager 102. The resource quantifier 106 is configured to calculate the availability in different ways depending upon how the quantity of any given resource is measured. One way is to keep a finite count. For instance, a resource quantifier 106 for a provider of tuning resources may be implemented as a counter that identifies how many tuners are free to be used.

The presently claimed invention, as now amended, recites:

wherein the equivalency defines the at least one set of equivalent resources that can be substituted for one another in accordance with the at least one policy definition that includes at least one conditional relationship specification to arrive at the desired end state

Sankaranarayan is merely teaching counting the number of resources that are the same, whereas the presently claimed invention is “defining the at least one set of equivalent resources that can be substituted for one another in accordance with the at least one policy definition that includes at least one conditional relationship specification to arrive at the desired end state”. Accordingly, the presently claimed invention distinguishes over Sankaranarayan for at least this reason as well.

The Examiner on pages 12-13 of the present Office Action also states that Sankaranarayan teaches:

a policy generator, communicatively coupled with the resource monitor and the memory, for providing in the memory a representation of a system-wide graph of available actions and at least one of: priority ratings, conditional relationship specifications, and alternative relationship specifications, corresponding with resources in the autonomic computing system (Fig. 5, table 500 & page 6, ¶0011, lines 1-3) a policy manager which sets various policies which are maintained by the resource manager;

However, the presently claimed invention now more clearly and distinctly claims “a policy generator, communicatively coupled with the resource monitor and the memory, for providing in the memory a representation of a system-wide graph of available actions and at least one of: conditional relationship specifications and alternative relationship specifications, corresponding with resources in the autonomic computing system”. Nowhere does Sankaranarayan teach or suggest this. Accordingly, the presently claimed invention distinguishes over Sankaranarayan for at least this reason as well.

The Examiner on page 13 of the present Office Action states that Sankaranarayan teaches:

An automation engine, communicatively coupled with the resource monitor, with at least one resource in the autonomic computing system, and with the memory, for providing available actions to the at least one resource in the in the autonomic computing system in order for the autonomic computing system to establish and maintain a desired end state(Fig. 18, 1810 & ¶0208, lines 1-5) the dispatch engine after receiving the activity event notifications from the resource manager dispatches further actions to be performed to satisfy the requirements.

However, paragraph [0208] of Sankaranarayan merely states:

The policy manager dispatch engine 1810 receives the activity event notifications from the resource manager 102, via the policy manager kernel component 1804 and interaction buffer component 1806, and then dispatches the notifications to the policies 110 for further action. The policy manager dispatch engine 1810 determines the absolute activity priorities after the activities have been "graded" by the policies 110. The policy manager dispatch engine 1810 also maintains a list of all of the policies as well as the activity list 1812 with the associated priority of each activity.

Sankaranarayan only teaches that notifications are sent to policies (which are policies for allocating resources such as conflict resolution policies). Nowhere does Sankaranarayan teach or suggest that actions are provided to resources nor that these actions are defined by the policy definition. Therefore Sankaranarayan does not teach or suggest “an automation engine, communicatively coupled with the resource monitor, with at least one resource in the autonomic computing system, and with the memory, for providing available actions as defined by the at least one policy definition to the at least one resource in the autonomic computing system in order for the autonomic computing system to establish and maintain a desired end state.”

The Applicants respectfully remind the Examiner that a proper rejection under 35 U.S.C. § 102(b) requires that a single reference teach (i.e., identically describe) each and every element of the rejected claims, which Sankaranarayan clearly does not do.²

² See MPEP §2131 (Emphasis Added) “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). “The identical invention must be shown in as complete detail as is contained in the ... claim.”

Accordingly, the present invention distinguishes over Sankaranarayan for at least this reason as well.

Therefore, in view of the foregoing amendments and remarks, the Applicants believe that the rejection of Claim 13 under 35 U.S.C. § 102(b) has been overcome. Claims 14-15 depend from Claim 13. Since dependent claims include all of the limitations of their independent claim, claims 14-15, are believed to also recite in allowable form. Accordingly, the Applicants request that the Examiner withdraw the rejection and allow Claims 13-15.

Rejection Under 35 U.S.C. 103 Eshghi in view of Sankaranarayan

The Examiner rejected Claims 3-4 and 9-10 under 35 U.S.C. 103(a) as being unpatentable over Eshghi U.S. Patent No. 5, 893,083 in view of Sankaranarayan U.S. Pre-Grant Publication No. 2005/0033846.

Claims 3-4 and 9-10 depend from Claims 2 and 8, respectively. The remarks and arguments made above with respect to Claims 2, 8, and 13 are also applicable here and will not be repeated. Therefore, independent Claims 2 and 8 and dependent claims 3-4 and 9-10 are not taught or suggested by Eshghi and Sankaranarayan taken individually and/or in any combination with each other. Accordingly, the Applicants request that the Examiner withdraw the rejection and allow Claims 3-4 and 9-10.

Rejection Under 35 U.S.C. 103 Sankaranarayan in view of Eshghi

The Examiner rejected Claims 16-21 under 35 U.S.C. 103(a) as being unpatentable over Eshghi U.S. Patent No. 5, 893,083 in view of Sankaranarayan U.S. Pre-Grant Publication No. 2005/0033846.

Claims 16-17 and claims 19-21 depend from Claims 13 and 18, respectively. Claim 18 recites similar to independent Claim 2. The remarks and arguments made above with respect to Claims 2, 8, and 13 are also applicable here and will not be repeated. Therefore, independent Claim 18 and dependent claims 16-17 and 19-21 are

not taught or suggested by Sankaranarayan and Eshghi alone and/or in combination with each other. Accordingly, the Applicants request that the Examiner withdraw the rejection and allow Claims 16-21.

Conclusion

The foregoing is submitted as a full and complete response to the Official Action mailed September 20, 2007, and it is suggested that Claims 1-21 are in condition for allowance. Reconsideration of the rejections is requested. Allowance of Claims 1-21 is earnestly solicited.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless Applicant has argued herein that such amendment was made to distinguish over a particular reference or combination of references.

Applicants acknowledge the continuing duty of candor and good faith to disclose information known to be material to the examination of this application. In accordance with 37 CFR § 1.56, all such information is dutifully made of record. The foreseeable equivalents of any territory surrendered by amendment are limited to the territory taught by the information of record. No other territory afforded by the doctrine of equivalents is knowingly surrendered and everything else is unforeseeable at the time of this Response by the Applicants and attorneys.

If the Examiner believes that there are any informalities that can be corrected by Examiner's amendment, or that in any way it would help expedite the prosecution of the patent application, a telephone call to the undersigned at (561) 989-9811 is respectfully solicited.

The present application, after entry of this Response With Amendment, comprises twenty-one (21) claims, including six (6) independent claims. Applicants have

previously paid for twenty-one (21) claims including six (6) independent claims. Applicants, therefore, believe that an additional fee for claims amendment is currently not due.

However, a petition for extension of time to timely file this response is hereby incorporated by reference herein. The Commissioner is authorized to charge the appropriate petition fee to avoid this application from becoming abandoned to Deposit Account **50-1556**.

The Commissioner is hereby authorized to charge any fees that may be required or credit any overpayment to Deposit Account No. **50-1556**.

In view of the preceding discussion, it is submitted that the claims are in condition for allowance. Reconsideration and re-examination is requested.

Respectfully submitted,

Date: February 20, 2008

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